

5160-91
N94-16333

VERTICAL STRUCTURE MODELS OF THE 1990 EQUATORIAL
DISTURBANCE ON SATURN; D.M. Kuehn, Pittsburg St. U., C. D. Barnet,
ISTS, and R. F. Beebe, NMSU

In September 1990, an atmospheric disturbance in the form of an abnormally high albedo area developed in the equatorial region of Saturn. Events of this nature are exceedingly rare for this planet as they have been detected in the equatorial region on only two other occasions in over a century [1]. In ongoing monitoring of the atmospheres of the outer planets, CCD imaging observations of Saturn by New Mexico State University's Tortugas Mountain Station were made before, during, and after the disturbance's formation through both broad-band filters and narrow-band visible/near-IR filters centered in methane absorption bands. Also, multispectral Hubble Space Telescope observations were made within weeks of the event and later in 1991 [2, 3]. These observations have been calibrated and scans of reflectivity at constant latitude are being modeled with a vertically inhomogeneous, multiple scattering model previously used to model Jupiter's South Equatorial Belt brightening event in 1989 [4]. In addition, the reflectivity of the disturbance as a function of the scattering angles is being obtained so as to model this feature's vertical structure in particular. A preliminary report of the modeling results will be presented.

[1] Sanchez-Lavega, A. (1989) *Sky and Telescope* 78, 141-143

[2] Westphal, J. A. *et al.* (1991) *Astrophys. J.*, 349, L51-L53.

[3] Barnet, C. D., Westphal J. A., Beebe R. F., and Huber L. F. (1992) *Icarus*, 100

[4] Kuehn, D. M., (1990) Ph.D. thesis, New Mexico State University.